Claims

1. Method for determining a change in volumetric efficiency for an internal combustion engine, characterized by the following steps:

- determining a reference volumetric efficiency in advance,

- determining a first prevailing volumetric efficiency from a first measured value at a first measurement point (M1, L1) in a first rotational speed range in which a change in the flow losses in an intake tract has only a minor effect on the volumetric efficiency,

- determining a second prevailing volumetric efficiency from a second measured value at a second measurement point (M2, L2) in a second rotational speed range which is above the first rotational speed range in terms of rotational speed,

- correcting the second prevailing volumetric efficiency by means of the first prevailing volumetric efficiency and

- determining the change in volumetric efficiency from the reference volumetric efficiency and the correct second prevailing volumetric efficiency.

2. Method as claimed in Claim 1, characterized in that the second measured value is determined at the same fresh gas quantity as the first measured value.

3. Method as claimed in Claim 1, characterized in that the internal combustion engine is in a steady state when a measured value is determined.

4. Method as claimed in Claim 1, characterized in that an exhaust gas recirculation is deactivated before determining a measured value.

5. Method as claimed in Claim 1, characterized in that a prevailing volumetric efficiency (□) is calculated from a measured value from a prevailing pressure (p) and a prevailing temperature (t) in the intake tract (4).

6. Method as claimed in Claim 1, characterized in that the volumetric efficiency and/or the change in volumetric efficiency between two measurement points is determined by interpolation and/or extrapolation.

7. Method as claimed in Claim 1, characterized in that operating conditions and/or ambient conditions are taken into account in determination of the measured values.

8. Use of a method for determining a change in volumetric efficiency as claimed in any one of the preceding claims for determination of an exhaust gas recirculation quantity for an internal combustion engine having exhaust gas recirculation, whereby

- an updated reference volumetric efficiency is determined from an original reference volumetric efficiency and the change in volumetric efficiency, and a reference gas quantity is determined from the updated reference volumetric efficiency,

- a prevailing gas mixture quantity is determined from the reference gas quantity by means of a prevailing temperature and a prevailing pressure,

- a fresh gas fraction of the prevailing gas mixture is determined and

- a prevailing exhaust gas recirculation quantity is determined on the basis of the difference between the prevailing gas mixture quantity and the fresh gas mixture fraction.

9. Use of a method for determining a change in volumetric efficiency as claimed in any one of the preceding claims for determination of an exhaust gas recirculation quantity for an internal combustion engine having exhaust gas recirculation whereby

- a prevailing volumetric efficiency is determined from a reference volumetric efficiency and the change in volumetric efficiency,

- a prevailing gas measurement quantity is determined from the prevailing volumetric efficiency, a prevailing pressure and a prevailing temperature,

- a fresh gas fraction of the prevailing gas mixture is determined and

- a prevailing exhaust gas recirculation quantity is determined on the basis of the difference between the prevailing gas mixture quantity and the fresh gas fraction.